

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Northrup King Co.

Whereas, THERE HAS BEEN PRESENTED TO THE
Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (AT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'S24-92'

In Testimony Whereof, I have hereunto set
my hand and caused the seal of the Plant
Variety Protection Office to be affixed
at the City of Washington, D.C.
this 30th day of September in
the year of our Lord one thousand nine
hundred and ninety-four.

Attest:

Kenneth Hoans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Ulie Esny
Secretary of Agriculture



U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) Northrup King Co.		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO.	3. VARIETY NAME S24-92
4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP) P. O. Box 959 Minneapolis, MN 55440		5. PHONE (include area code) 612-593-7333	FOR OFFICIAL USE ONLY PVPO NUMBER 9200169 Date Apr. 29, 1992 Time <input type="checkbox"/> A.M. <input type="checkbox"/> P.M. Filing and Examination Fee: \$ 2,150.00 Date Apr. 29, 1992 Certificate Fee: \$ 250.00 Date Sept. 13, 1994
6. GENUS AND SPECIES NAME Glycine max	7. FAMILY NAME (Botanical) Leguminosae		
8. CROP KIND NAME (Common Name) Soybean	9. DATE OF DETERMINATION September, 1989		
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) Corporation			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION Delaware		12. DATE OF INCORPORATION 1976	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS Robert W. Romig Northrup King Co. P. O. Box 959 Minneapolis, MN 55440			
			PHONE (include area code): 612-593-7305

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverse)

a. ☒ Exhibit A, Origin and Breeding History of the Variety.

b. ☒ Exhibit B, Novelty Statement.

c. ☒ Exhibit C, Objective Description of Variety.

d. ☐ Exhibit D, Additional Description of Variety.

e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.

f. ☒ Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office _____

g. ☒ Filing and Examination Fee (\$2,150) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See section 83(a) of the Plant Variety Protection Act.)
☐ YES (If "YES," answer items 16 and 17 below) ☒ NO (If "NO," skip to item 18 below)

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☐ YES ☒ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

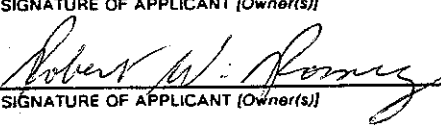
18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?
☐ YES (If "YES," through ☐ Plant Variety Protection Act ☐ Patent Act. Give date. _____) ☒ NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES?
☐ YES (If "YES," give names of countries and dates) ☒ NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT [Owner(s)] 	CAPACITY OR TITLE Vice President Research	DATE April 27, 1992
SIGNATURE OF APPLICANT [Owner(s)]	CAPACITY OR TITLE	DATE

Origin and Breeding History of the Variety

The soybean variety 'S24-92' is derived from a cross between 'A3127' and an experimental line selected from a cross between CM385 and CM399. The cross was made in the summer of 1983, and the F1 and F2 generations advanced in the winter of 1983-84. The F3 generation was grown in the summer of 1984, and individual plants were harvested and threshed individually. The progeny of these plants were yield-tested in an F4 line test in 1985. One of these lines, the progenitor of S24-92, was chosen based on performance for continued testing in 1986 and 1987. Because the original line was heterogeneous for several characteristics, single F6 plants were harvested and threshed individually in the fall of 1987. The progeny of one of these plants was tested for performance and uniformity, increased, and released as S24-92.

S24-92 was tested in several midwest locations from 1988 to 1991 and found to yield well in comparison to other Maturity Group II varieties. Descriptive characteristics including purple flowers, tawny pubescence, brown pods, and black hilum were identified and confirmed.

Seed increase of S24-92 was initiated in 1988 as noted above. Pre-Breeder Seed was grown in 1989, and Breeder Seed was grown in 1990 and 1991. A few plants were removed from these increase blocks which did not conform to the variety description. They were assumed to have resulted from outcrossing or admixture.

S24-92 is stable and uniform. No variants have been observed during testing and seed increase other than an occasional off-type as referred to above. Varietal purity will be maintained by use of progeny rows as needed.

Novelty Statement for the Variety

Soybean variety S24-92 is most similar to Kenwood. It can be differentiated from Kenwood on the basis of lodging score (based on 1.0 = completely upright to 5.0 = completely prostrate). S24-92 lodges less than Kenwood. Data supporting this claim are given in the accompanying tables.

Lodging Scores for S24-92 and Kenwood, 1991Northrup King Early Group II Advanced Trial

<u>Variety</u>	<u>AVE.</u>	<u>Wyo.</u>	<u>Fin.</u>	<u>Ken.</u>	<u>Poc.</u>	<u>V.C.</u>	<u>Hud.</u>	<u>Wau.</u>	<u>M.C.</u>	<u>Cha.</u>	<u>S.J.</u>
Kenwood	2.2	1.8	1.8	2.3	2.0	2.6	2.5	2.0	3.1	1.5	1.6
S24-92	1.7	1.5	1.5	2.0	2.0	2.1	1.8	1.7	1.6	1.5	1.3
LSD	0.3	0.3	0.5	0.8	0.6	0.6	0.5	0.3	0.4	0.5	0.2

Northrup King Late Group II Advanced Trial

<u>Variety</u>	<u>AVE.</u>	<u>Cha.</u>	<u>Poc.</u>	<u>Hud.</u>	<u>Wau.</u>	<u>Was.</u>	<u>Ott.</u>	<u>Aub.</u>	<u>S.J.</u>	<u>Ken.</u>
Kenwood	2.2	1.5	2.3	3.0	2.3	1.6	2.4	2.8	2.0	2.3
S24-92	1.7	1.3	1.5	2.3	1.7	1.3	2.1	2.3	1.5	1.7
LSD	0.2	0.6	0.5	0.6	0.4	0.2	0.3	0.5	0.3	1.0

Iowa State University Trials

<u>Variety</u>	<u>Late Trial, North</u>	<u>Early Trial, Central</u>
Kenwood	2.7	2.7
S24-92	1.7	1.6
LSD	0.3	0.3

U.S. DEPARTMENT OF AGRICULTURE
 AGRICULTURAL MARKETING SERVICE
 LIVESTOCK, MEAT, GRAIN & SEED DIVISION
 PLANT VARIETY PROTECTION OFFICE
 BELTSVILLE, MARYLAND 20705

EXHIBIT C
 (Soybean)

OBJECTIVE DESCRIPTION OF VARIETY
 SOYBEAN (*Glycine max* L.)

NAME OF APPLICANT(S) Northrup King Co.	TEMPORARY DESIGNATION X9124	VARIETY NAME S24-92
ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code) P. O. Box 959 Minneapolis, MN 55440 Attention: R. W. Romig		FOR OFFICIAL USE ONLY PVPO NUMBER 9200169

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g.,).

1. SEED SHAPE:



1 = Spherical (L/W, L/T, and T/W ratios = < 1.2)
 3 = Elongate (L/T ratio > 1.2; T/W = < 1.2)

2 = Spherical Flattened (L/W ratio > 1.2; L/T ratio = < 1.2)
 4 = Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

2. SEED COAT COLOR: (Mature Seed)

1 = Yellow

2 = Green

3 = Brown

4 = Black

5 = Other (Specify) _____

3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

1 = Dull ('Corsoy 79'; 'Braxton') 2 = Shiny ('Nebsoy'; 'Gasoy 17')
 (Somewhat intermediate)

4. SEED SIZE: (Mature Seed)

Grams per 100 seeds

5. HILUM COLOR: (Mature Seed)

1 = Buff

2 = Yellow

3 = Brown

4 = Gray

5 = Imperfect Black

6 = Black

7 = Other (Specify) _____

6. COTYLEDON COLOR: (Mature Seed)

1 = Yellow

2 = Green

7. SEED PROTEIN PEROXIDASE ACTIVITY:

1 = Low

2 = High

8. SEED PROTEIN ELECTROPHORETIC BAND:

1 = Type A (SP1^a)2 = Type B (SP1^b)

9. HYPOCOTYL COLOR:

1 = Green only ('Evans'; 'Davis')

2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')

3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')

4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

10. LEAFLET SHAPE:

1 = Lanceolate

2 = Oval

3 = Ovate

4 = Other (Specify) _____

11. LEAFLET SIZE:

☒ 21 = Small ('Amsoy 71'; 'A5312')
3 = Large ('Crawford'; 'Tracy')

2 = Medium ('Corsoy 79'; 'Gasoy 17')

12. LEAF COLOR:

☒ 21 = Light Green ('Weber'; 'York')
3 = Dark Green ('Gnome'; 'Tracy')

2 = Medium Green ('Corsoy 79'; 'Braxton')

13. FLOWER COLOR:

☒ 2

1 = White

2 = Purple

3 = White with purple throat

14. POD COLOR:

☒ 2

1 = Tan

2 = Brown

3 = Black

15. PLANT PUBESCENCE COLOR:

☒ 2

1 = Gray

2 = Brown (Tawny)

16. PLANT TYPES:

☒ 21 = Slender ('Essex'; 'Amsoy 71')
3 = Bushy ('Gnome'; 'Govan')

2 = Intermediate ('Amcor'; 'Braxton')

17. PLANT HABIT:

☒ 3

1 = Determinate ('Gnome'; 'Braxton')

2 = Semi-Determinate ('Will')

3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

18. MATURITY GROUP:

☐ 5

1 = 000

2 = 00

3 = 0

4 = I

5 = II

6 = III

7 = IV

8 = V

9 = VI

10 = VII

11 = VIII

12 = IX

13 = X

19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

BACTERIAL DISEASES:

☐Bacterial Pustule (*Xanthomonas phaseoli* var. *sojensis*)☐Bacterial Blight (*Pseudomonas glycinea*)☐Wildfire (*Pseudomonas tabaci*)

FUNGAL DISEASES:

☒ 1Brown Spot (*Septoria glycines*)Frogeye Leaf Spot (*Cercospora sojina*)☐

Race 1

☐

Race 2

☐

Race 3

☐

Race 4

☐

Race 5

☐

Other (Specify)

☐Target Spot (*Corynespora cassiicola*)☐Downy Mildew (*Peronospora trifoliorum* var. *manshurica*)☐Powdery Mildew (*Microsphaera diffusa*)☒ 1Brown Stem Rot (*Cephalosporium gregatum*) Moderate Field resistance☐Stem Canker (*Diaporthe phaseolorum* var. *caulivora*)

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19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

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FUNGAL DISEASES: (Continued)

☒ 1 Pod and Stem Blight (*Diaporthe phaseolorum* var. *sojae*)
☒ 1 Purple Seed Stain (*Cercospora kikuchii*)
☐ Rhizoctonia Root Rot (*Rhizoctonia solani*)
 Phytophthora Rot (*Phytophthora megasperma* var. *sojae*)
☒ Race 1 | ☒ Race 2 | ☒ Race 3 | ☒ Race 4 | ☐ Race 5 | ☐ Race 6 | ☒ Race 7
☐ Race 8 | ☐ Race 9 | ☐ Other (Specify) _____

VIRAL DISEASES:

☐ Bud Blight (Tobacco Ringspot Virus)
☐ Yellow Mosaic (Bean Yellow Mosaic Virus)
☐ Cowpea Mosaic (Cowpea Chlorotic Virus)
☐ Pod Mottle (Bean Pod Mottle Virus)
☐ Seed Mottle (Soybean Mosaic Virus)

NEMATODE DISEASES:

Soybean Cyst Nematode (*Heterodera glycines*)
☐ Race 1 | ☐ Race 2 | ☒ Race 3 | ☒ Race 4 | ☐ Other (Specify) _____
☐ Lance Nematode (*Hoplaimus Colombus*)
☐ Southern Root Knot Nematode (*Meloidogyne incognita*)
☐ Northern Root Knot Nematode (*Meloidogyne Hapla*)
☐ Peanut Root Knot Nematode (*Meloidogyne arenaria*)
☐ Reniform Nematode (*Rotylenchulus reniformis*)
☐ OTHER DISEASE NOT ON FORM (Specify): _____

20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

☒ 1 Iron Chlorosis on Calcareous Soil
☐ Other (Specify) _____

21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

☐ Mexican Bean Beetle (*Epilachna varivestis*)
☐ Potato Leaf Hopper (*Empoasca fabae*)
☐ Other (Specify) _____

22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape	A2234	Seed Coat Luster	S20-20
Leaf Shape	S29-39	Seed Size	Kenwood
Leaf Color	Kenwood	Seed Shape	S20-20
Leaf Size	S20-20	Seedling Pigmentation	S25-15

23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

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VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS	NO. SEEDS/POD
				CM Width	CM Length	% Protein	% Oil		
Submitted	119	1.7	73	6.4	10.2	38.1	23.0	15.0	2-4
Kenwood Name of Similar Variety	121	2.2	86	5.6	10.0	36.9	23.4	14.4	2-4

PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A₂ in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.

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EXHIBIT E

Statement of the Basis of Applicant's Ownership

Soybean variety S24-92 was developed from germplasm sources cited in Exhibit A of this application. Northrup King Co. believes that the variety is novel as defined in the Plant Variety Protection Act and, therefore, that Northrup King Co. is the sole owner of the variety.